

The Explosive Secrets of *Major Jordan's Diaries*

*During 1942-45,
high-level US
officials covertly
helped the USSR
acquire large
quantities of
materials for its
secret atom-bomb
research project.*

*Will history judge
the ensuing Cold
War as a monstrous
set-up?*

Part 2

Extracted from
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© 1952 by George Racey Jordan,
USAF (Ret.)
with Richard L. Stokes
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From the outset, extraordinary secrecy and security measures have surrounded the project," declared Henry L. Stimson, Secretary of War, in commenting on the first military use of the atom bomb. "This was personally ordered by President Roosevelt." Mr Roosevelt's orders, he innocently added, "have been strictly complied with."

Yet Russians with whom I worked side by side at Great Falls knew about the A-bomb at least as early as March 1943, and General Groves had reason to distrust the Russians in October 1942! In common with almost all Americans, I got the first hint of the existence of the atom bomb from the news of Hiroshima, which was revealed on August 6, 1945 by President Truman.

I visited Washington in January 1944 to bring to the attention of the highest authorities what seemed to me to be treacherous violations of security in the Pipeline. I got exactly nowhere in the State Department or elsewhere. It was not until I heard the announcement of the atomic blast in Russia on September 23, 1949, that I finally had the good fortune of meeting Senator Bridges and Fulton Lewis—but more of that later.

It was after eleven o'clock, and my checking job was virtually done, when Colonel Kotikov burst into the cabin of the plane. He wanted to know by whose authority I was committing this outrage [see previous issue] and bellowed that he would have me removed. I answered that I was performing my duty, and, just to show how things stood, opened two or three extra suitcases in his presence. I left the C-47 and with a nod of thanks dismissed my sentinel.

As I crossed the field toward the barracks, Colonel Kotikov fell in beside me. No doubt he reflected that he was in no position to force an issue. He may also have realized that I understood the gravity of almost nothing I had seen. All that mattered to him was getting the suitcases off to Moscow. Anxiously he inquired what I intended to do.

If I had known what I do today, I should have grounded the transport, but in the end it went on its way to Russia.

Colonel Kotikov asked me to open no more suitcases until instructions came from the War Department. He said he hoped he would not have to get me transferred. I expected to be fired, and went so far as to pack my gear. But I received no communication from the War Department, and gathered at last that Colonel Kotikov had made no complaint. Perhaps, I began to think, he did not dare.

I reported to Colonel George F. O'Neill, security officer of the 34th Sub-Depot at Gore Field, about the fifty suitcases I had examined. He was interested enough to pass the story on to his superior officer in Spokane. There was no reply, even after Colonel O'Neill made a second attempt. Apparently it was not considered good form to cast reflections on the integrity of our ally...

"DON'T MAKE A BIG PRODUCTION..."

One morning in April 1943, Colonel Kotikov asked whether I could find space for an important consignment of nearly 2,000 pounds. I said, "No, we have a quarter of a million pounds' backlog already."

He directed me to put through a call to Washington for him, and spoke for a while in his own tongue. Then he put a hand over the mouthpiece and confided to me in English, "Very special shipment—experimental chemicals—going through soon."

There was an interval of Slavic gutturals, and he turned to me again. "Mr Hopkins—coming on now," he reported. Then he gave me the surprise of my life. He handed me the phone and announced, "Big boss, Mr Hopkins, wants you."

It was quite a moment. I was about to speak for the first time with a legendary figure of the day, the top man in the world of Lend-Lease in which I lived. I have been careful to keep the following account as accurate in substance and language as I can. My memory, normally good, was stimulated by the thrill of the occasion. Moreover, the incident was stamped on my mind because it was unique in my experience of almost 25 months at Newark and Great Falls.

A bit in awe, I stammered, "Jordan speaking."

The male voice began at once. "This is Mr Hopkins. Are you my expediter out there?"

I answered that I was the United Nations Representative at Great Falls, working with Colonel Kotikov.

Under the circumstances, who could have doubted that the speaker was Harry Hopkins? Friends have since asked me whether it might not have been a Soviet agent who was an American. I doubt this, because his next remark brought up a subject which only Mr Hopkins and myself could have known.

He asked, "Did you get those pilots I sent you?"

"Oh yes, sir," I responded. "They were very much appreciated, and helped us in unblocking the jam in the Pipeline. We were accused of going out of channels, and got the dickens for it."

Mr Hopkins let that one go by, and moved on to the heart of things. "Now, Jordan," he said, "there's a certain shipment of chemicals going through that I want you to expedite. This is something very special."

"Shall I take it up," I asked, "with the Commanding Colonel?"

"I don't want you to discuss this with anyone," Mr Hopkins ordered, "and it is not to go on the records. Don't make a big production of it, but just send it through quietly, in a hurry."

I asked how I was to identify the shipment when it arrived. He turned from the phone, and I could hear his voice: "How will Jordan know the shipment when it gets there?" He came back on the line and said, "The Russian Colonel out there will designate it for you. Now send this through as speedily as possible, and be sure you leave it off the records!"

Then a Russian voice broke in with a demand for Colonel Kotikov. I was full of curiosity when Kotikov had finished, and I wanted to know what it was all about and where the shipment was coming from. He said there would be more chemicals and that they would arrive from Canada.

"I show you," he announced.

Presumably, after the talk with Mr Hopkins, I had been accepted as a member of the 'lodge'. From his bundle on war chemicals the Colonel took the folder called "Bomb Powder". He drew out a paper sheet and set a finger against one entry. For a second time my eyes encountered the word "Uranium". I repeat that in 1943 it meant as little to me as to most Americans, which was nothing.

This shipment was the one and only cash item to pass through my hands, except for private Russian purchases of clothing and liquor. It was the only one, out of a tremendous multitude of consignments, that I was ordered not to enter on my tally sheets. It was the only one I was forbidden to discuss with my superiors, and the only one I was directed to keep secret from everybody.

Despite Mr Hopkins' urgency, there was a delay of five weeks.

On the morning of June 10th, I caught sight of a loaded C-47 which was idling on the runway. I went over and asked the pilot what was holding him up. He said he understood some kind of special shipment was still to come. Seven years afterward, the pilot identified himself to the press as Air Forces Lieutenant Ben L. Brown, of Cincinnati.

I asked Colonel Kotikov about the plane, and he told me the shipment Mr Hopkins was interested in had just arrived at the railroad yards, and that I should send a truck to pick it up. The consignment was escorted by a Russian guard from Toronto. I set down his name, and copied it later in my diary. It was Vladimir Anoufrieu. I identified him with the initials "C.C." for "Canadian Courier".

Fifteen wooden cases were put aboard the transport, which took off for Moscow by way of Alaska. At Fairbanks, Lieutenant Brown has related, one box fell from the plane, smashing a corner and spilling a small quantity of chocolate-brown powder. Out of curiosity, he picked up a handful of the unfamiliar grains, with a notion of asking somebody what they were. A Soviet officer slapped the crystals from his palm and explained nervously, "No, no—burn hands!"

Not until the latter part of 1949 was it definitely proved, from responsible records, that during the war Federal agencies delivered to Russia at least three consignments of uranium chemicals, totaling 1,465 pounds, or nearly three-quarters of a ton. Confirmed also was the shipment of one kilogram, or 2.2 pounds, of uranium metal at a time when the total American stock was 4.5 pounds.

Implicated by name were the Lend-Lease Administration, the Department of Commerce,

the Procurement Division of the Treasury and the Board of Economic Warfare. The State Department became involved to the extent of refusing access to files of Lend-Lease and its successor, the Foreign Economic Administration.

The first two uranium shipments traveled through Great Falls by air. The third was dispatched by truck and railway from Rochester, NY, to Portland, Oregon, and then by ship to Vladivostok. The dates were March and June 1943, and July 1944. No doubt was left that the transaction discussed by Mr Hopkins and myself was the one of June 1943.

This was not merely the largest of our known uranium deals with the Soviet Union, it was also the most shocking. There seemed to be no lengths to which some American officials would not go in aiding Russia to master the secret of nuclear fission. For four years, monopoly of the A-bomb was the cornerstone of our military and overseas policy, yet on September 23, 1949, long in advance of Washington estimates, President Truman announced that an atomic explosion had occurred in the Soviet Union.

In behalf of national security, the Manhattan Project during the spring of 1943 clapped an embargo on American exports of uranium compounds. But zealots in Washington appear to have resolved that Russia must have at all costs the ingredients for atomic experiment. The intensely pro-Soviet mood of that time may be judged from echoes in later years.

For example, there was Joseph E. Davies, Ambassador to the

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Soviet Union in 1936-39, and author of a book and movie of flagrant propaganda, *Mission to Moscow*. In an interview with the *Times-Herald* of Washington for February 18, 1946, he was quoted as saying, "Russia, in self-defense, has every moral right to seek atomic bomb secrets through military espionage if excluded from such information by her former fighting allies!" There also was Professor Harold C. Urey, American scientist, who sat in the innermost circle of the Manhattan Project. Yet on December 14, 1949, in a report of the Atlantic Union Committee, Dr Urey said that Major Jordan should be court-martialed if he had removed anything from planes bound for Russia.

When American supplies were cut off, the device of out-maneuvering General Groves was to procure the materials clandestinely from Canada. Not until 1946 did the commander of the Manhattan Project learn from the Un-American Activities Committee that his stockade had been undermined.

My share in the revelation was testimony under oath, leading to one conclusion only: that the Canadian bypass was aided by Mr Hopkins. At his direction, Lend-Lease issued a certificate of release without which the consignment could not have moved. Lend-Lease channels of transportation and Lend-Lease personnel, such as myself, were used. Traces of the scheme were kept off Lend-Lease books by making it a 'cash' transaction. The shipment was paid for with a check of the Amtorg Trading Corporation.

Because of the initial branch of the airlift to Moscow was under American control, passage of the chemicals across United States territory could not be avoided, in Alaska if not Montana. On account of that fact—the cash nature of the project—it was necessary to obtain an export license from the Board of Economic Warfare. Such a document, covering a shipment of American

origin, was first prepared. It was altered, to comply with the Canadian maneuver, by some BEW official whose identity has been concealed by the State Department. As amended, the license was issued on April 29, 1943. Its serial number was C-1643180.

But two facts were forgotten: (a) public carriers use invoices, and (b) the Air Forces kept tallies not only at Great Falls but Fairbanks.

By diligent searching, freight and airway bills yielded incontestable proof that 15 boxes of uranium chemicals were delivered at Great Falls on June 9, 1943, and were dispatched immediately, in a Lend-Lease plane, to the Soviet Union.

The shipment originated at Eldorado Mining & Refining, Ltd, of Great Bear Lake, and was sent through Port Hope, Ontario. It was authorized by a Canadian arms export permit, No. OF1666. The carrier was the Chicago, Milwaukee, St Paul & Pacific Railway. Listed as consignee was Colonel A. N. Kotikov, resident agent of the Soviet Government Purchasing Commission at Gore Field, Great Falls.

The story behind the story is as follows. On February 1, 1943, Hermann H. Rosenberg of Chematar, Inc., New York City, received the first inquiry about uranium ever to reach his office. The applicant was the Soviet Purchasing Commission, which desired 220 pounds of uranium oxide, 220 pounds of uranium nitrate, and 25 pounds of uranium metal.

At that date Oak Ridge was under construction, but would not

be in operation for another year.

Six days earlier the War Production Board had issued General Reference Order M-285, controlling the distribution of uranium compounds among domestic industries like glass, pottery and ceramics. A loophole was left by overlooking the export of such materials for war purposes. The Russians claimed that they had urgent military need for uranium nitrate in medicinal research, and for uranium oxide and metal as alloys in hardening gun-barrel steel. There was nothing for the US to do but grant an OK, since we did not want to imply that we were suspicious of Russia's request.

Uranium metal was unavailable. On March 23, at Rosenberg's instance, the S. W. Shattuck Chemical Co. of Denver shipped four crates, weighing 691 pounds, to Colonel Kotikov at Great Falls. The Burlington Railroad's bill of lading described the contents merely as "Chemicals", but it was accompanied by a letter from Rosenberg to Kotikov designating the contents as 220 pounds of uranium nitrate and 200 (not 220) pounds of uranium oxide. Since it was a Lend-Lease transaction, defrayed with American funds, no export license was required. The cargo was dispatched without friction along the Pipeline.

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But the War Production Board, from which clearance had been sought, alerted the Manhattan Project. It was too late to halt the Shattuck sale. General Groves reluctantly approved it on the ground that it would be unwise to 'tip off' Russia as to the importance of uranium chemicals—a fact with which Moscow was only too familiar.

During the investigation, I was embarrassed by questions as to why tables of exports to the Soviet Union contained no mention of uranium. The Shattuck consignment was legitimate. It had been

authorized by Lend-Lease, the War Production Board and the Manhattan Project.

Some months later I ran into John F. Moynihan, formerly of the *Newark News* editorial staff. A Second Lieutenant at the Newark Airport when I was there, he had risen to Colonel as a sort of 'reverse press-agent' for General Groves. His duty was not to foster publicity but prevent it.

"I heard you floundering about," he said, "and wished I could tell you something you didn't know. I was sent to Denver to hush up the records in the Shattuck matter. It was hidden under the phrase, 'salts and compounds', in an entry covering a different metal."

General Groves moved rapidly to stop the leak through which the Shattuck boxes had slipped. By early April he had formed a nationwide embargo by means of voluntary contracts with chemical brokers. They promised to grant the United States first right to purchase all uranium oxide, uranium nitrate and sodium uranate received by the contractors.

The uranium black-out was discovered by Rosenberg when he tried to fill another order from the Soviet Purchasing Commission, for 500 pounds each of uranium nitrate and uranium oxide. On April 23, 1943, Rosenberg was in touch with the Canadian Radium & Uranium Corp. of New York, which was exclusive sales agent for Eldorado Mining & Refining, Ltd, a producer of uranium at Great Bear Lake.

An agreement to fill the Soviet order was negotiated with such dispatch that in four days Rosenberg was able to report victory to the Purchasing Commission. The shipment from Ontario to Great Falls and Moscow followed in due course.

The Port Hope machination had the advantage, among other things, of bypassing the War Production Board, which was sure to warn the Manhattan Project if it knew the facts, but could be kept in ignorance because its jurisdiction ran only south of the border.

General Groves was advised at once of the Soviet application for 1,000 pounds of uranium salts. He was not disturbed, being confident the embargo would stand. After declining to endorse the application, he approved it later in the hope of detecting whether the Russians could unearth uranium stocks which the Manhattan Project had overlooked. American industries were consuming annually, before the war, upwards of 200 tons of uranium chemicals.

"We had no expectation," General Groves testified December 7, 1949, "of permitting that material to go out of this country. It would have been stopped."²

So far as the United States was concerned, the embargo held fast. The truth that it had been side-stepped by means of resort to Canadian sources did not come to the General's knowledge until three years later.

Another violation of atomic security was represented by the third known delivery to Russia, in 1944. It proved to be uranium nitrate. During May of that year, Colonel Kotikov showed me a warning from the Soviet Purchasing Commission to look out for a shipment of uranium, weighing 500 pounds, which was to have travel priority. The Colonel was soon returning home. As the climax of his American mission, he proposed to fly the precious stuff to Moscow with his own hands.

Disguised as a "commercial transaction" within American territory, the deal was managed by Lend-Lease. Chematar and Canadian Radium & Uranium were abandoned in favor of the Procurement Division of the Treasury Department, although the Treasury, under regulations, had no authority to make uranium products available to the Soviet Union.

Contractors were asked to bid, and the winner was the Eastman Kodak Company. Somewhere in this process, the expected 500 pounds shrank to 45. Eastman Kodak reported the order to the War Production Board as a domestic commercial item.

Whatever the motive, it was determined not to send the compound by air. After a Treasury inspection in Rochester, the MacDaniel Trucking Company drove it to the Army Ordnance Depot at Terre Haute, Indiana, arriving July 24. The shipment turned up in freight car No. 97352 of the Erie Railroad, and got to North Portland, Oregon, on August 11. By means of shifts not yet divulged, the uranium nitrate found itself aboard a Russian steamship, *Kashirstroi*, which left for Vladivostok on October 3. Colonel Kotikov, who had planned a triumphal entry into Moscow with a quarter-ton of "bomb powder" as a trophy, gave up the project in disgust on learning that the shipment would be only 45 pounds.

In charge of uranium purchases for the Manhattan Project in

1944 was Dr Phillip L. Merritt. Appearing January 24, 1950 before the Un-American Activities Committee, Dr Merritt swore he was taken by surprise, a day earlier, on discovering for the first time that the Eastman Kodak order had been shipped to Russia by way of Army Ordnance.

General Groves was likewise uninformed. Asked as a witness whether it was possible for uranium shipments to have been made in 1944, he answered, "Not if we could have helped it, and not with our knowledge of any kind. They would have had to be entirely secret, and not discovered."³ He declared there was no way for the Russians to get uranium products in this country "without the support of US authorities in one way or another."⁴

The Soviet Purchasing Commission appears to have had instructions to acquire without fail 25 pounds of uranium metal, which can be extracted from uranium salts by a difficult process requiring specialized equipment. Supported or advised by Lend-Lease, the commission for a whole year knocked at every available door, from the Chemical Warfare Service up to Secretary Stimson. As a matter of fact, uranium metal was then non-existent in America, and for that reason had not been specified in the Manhattan Project's embargo or named as a "strategic" material.

Stimson closed a series of polite rebuffs with a letter of April 17, 1944, to the chairman of the Purchasing Commission, Lt

General Leonid G. Rudenko. But Moscow was stubborn. Under Soviet pressure, the commission, or its American friends, had an inspiration. Why not have the uranium made to order by some private concern?

As usual, a roundabout course was taken. The commission first approached the Manufacturers Chemical Co., 527 Fifth Avenue, New York, which passed the order along to A. D. Mackay, Inc., 198 Broadway. By the latter it was farmed out to the Cooper Metallurgical Laboratory in Cleveland. According to Mr Mackay, neither he nor the

Cooper concern suspected that their customer was the Soviet Union.

But Mackay reported the deal to the War Production Board, which warned the Manhattan Project. The latter's expert on rare metals, Lawrence C. Burman, went to Cleveland, it is related, and urged the Cooper firm to make sure that its product was of "poor quality". He did not explain why. But the metal, of which 4.5 pounds was made, turned out to be 87.5 per cent pure as against the stipulated 99 per cent.

Delivery to the Soviet Union was then authorized of a small sample of this defective metal, to represent "what was available in the United States". Actually shipped was one kilogram, or 2.2 pounds. The Purchasing Commission abruptly silenced its demands for pure uranium. But the powers that be found it suitable to omit this item, as well as the Rochester sale, from the 1944 schedule of exports to Russia.

From the start, in contrast to the atmosphere prevailing in Washington, the Manhattan Project was declared by General Groves to have been "the only spot I know that was distinctly anti-Russian."⁵ Attempts at espionage in New York, Chicago and Berkeley, California, were traced to the Soviet Embassy. They convinced General Groves in October 1942 that the enemies of

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our atomic safeguards were not Germans or Japanese, but Russians. "Suspicion of Russia was not very popular in some circles [in Washington]," he stated. "It was popular in Oak Ridge, and from one month of the time I took over we never trusted them one iota. From that time on, our whole security was based on not letting the Russians find out anything."⁶

That the Russians found out everything from alpha to omega has been established by volumes of proof. Through trials in Canada, England and the United States there has been revealed the existence of an espionage network so enormously effective that Russia, scientists calculated, "should have been able to make a bomb considerably before September 1949". The network chief was the former Soviet Vice Consul in New York, Anatoli A. Yakovlev, who fled in 1946.

THE STORY OF THE "HEAVY WATER"

What is popularly known as "heavy water" is technically called deuterium oxide. It is in crystal form, not liquid.

In alleging medical and other grounds for its needs of uranium oxide and uranium nitrate, Russia had taken care to observe an appearance of truth, for such use is not unknown to therapeutics. It had been tried out in throat sprays and lent its name to *Uranwein*, a German specific against diabetes. Uranium oxide had been tested as an alloy for toughening steel, but it was found difficult to handle and had erratic results. Therefore when Moscow asked for heavy water, they let the cat out of the bag. Except for curious experiments in retarding plant growth, heavy water boasts only one useful property: it is the best of moderators for slowing down the speed of neutrons in nuclear reactions.

Records in evidence⁷ prove that on August 23, 1943, Hermann Rosenberg of Chematar received an application from the Soviet Purchasing Commission for 1,000 grams of deuterium oxide. The purpose stated was "research". A supplier was found in the Stuart

Oxygen Co. of San Francisco, which shipped the merchandise on October 30 by railway express to Chematar's New York office. Rosenberg forwarded the consignment to the Purchasing Commission in Washington, which dispatched it on November 29, by way of the Pipeline, to Rasnoimport, USSR, Moscow U-1, Ruybjshova-22.

The order was packed with as much tenderness as if it had been a casket of jewels. Forty pyrex ampoules, each containing 25 grams, were enclosed in mailing tubes and wrapped in layers of cotton. The ampoules were divided in lots of 10 among four cartons, which were placed, with further precautions against damage, in a large wooden box. This was strapped and sealed. The overall weight was 41.12 pounds. The cost of the fluid content was that of expensive perfumes—\$80 an ounce.

The export of heavy water to the Soviet Union was approved by a release certificate, No. 366, dated November 15, with the signature of William C. Moore, Division for Soviet Supply, Office of Lend-Lease Administration.

If General Groves had been consulted, the heavy water would not have left this country. Had it been known at the time, he said, that 1,000 grams were available, unquestionably he would have bought the treasure himself. He added, "If it had been pure."⁸ That it was between 99.7 and 99.8 per cent pure was attested by an independent analysis made for Rosenberg in the laboratories of Abbot A. Hanks, Inc., San Francisco.

At the beginning of 1945, the Soviet Purchasing Commission placed with Rosenberg a second order for heavy water. Only 100 grams were sought. He applied once more to the Stuart concern, which expressed the 'liquid diamonds' to Chematar on February 7. One week later Rosenberg forwarded the parcel to the commission. Its subsequent adventures have not been traced. In August of the same year, Rosenberg was naturalized as an American citizen...

The book, *From Major Jordan's Diaries*, contains many pages listing the US\$9.6 billion worth of material sent to Russia from 1942-1945. Of particular interest is this list of "Atomic Materials", all of which are necessary in the construction of the atomic bomb.

Item	Quantity	Cost in US Dollars
Beryllium metals	9,681 lbs	10,874
Cadmium alloys	72,535 lbs	70,029
Cadmium metals	834,989 lbs	781,466
Cobalt ore & concentrate	33,600 lbs	49,782
Cobalt metal & cobalt-bearing scrap	806,941 lbs	1,190,774
Uranium metal	2.2 lbs	—
Aluminum tubes	13,766,472 lbs	13,041,152
Graphite, natural, flake, lump or chip	7,384,282 lbs	812,437
Beryllium salts & compounds	228 lbs	775
Cadmium oxide	2,100 lbs	3,080
Cadmium salts & compounds	2 lbs	19
Cadmium sulfate	2,170 lbs	1,374
Cadmium sulfide	16,823 lbs	17,380
Cobalt nitrate	51 lbs	48
Cobalt oxide	17,800 lbs	34,832
Cobalt salts & compounds	11,475 lbs	7,112
Cobaltic & cobaltous sulfate	22 lbs	25
Deuterium oxide (heavy water)	1,100 grs	—
Thorium salts & compounds	25,352 lbs	32,580
Uranium nitrate	500 lbs	—
Uranium nitrate (U02)	220 lbs	—
Uranium oxide	500 lbs	—
Uranium, urano-uranic oxide (U308)	200 lbs	—

Was one kilogram of heavy water and were mere hundreds of pounds of uranium chemicals too insignificant for important use?

Specialists agree that the quantities delivered were inadequate for producing one A-bomb or even one experimental pile. They point out, however, that scarcely any fraction of a substance can be too small for laboratory research. The head of a pin could not have been formed with the first plutonium ever made. From 500 micrograms were determined most of the properties and the chemical behavior of an element which 18 months earlier had been entirely unknown.

On the presumption that 1,465 pounds of uranium salts were contributed to the Soviet Union, metallurgists estimate that they were reducible in theory to 875 pounds of natural uranium, which in turn would yield 6.25 pounds of fissionable U-235. But 4.4 pounds of the latter, or nearly two pounds less, are capable of producing an atomic explosion. Authority for this assertion may be found in the celebrated report which Dr Henry De-Wolf Smyth of Princeton University wrote at the request of General Groves and published in 1945.

The Shattuck and Eldorado purchases totaled 1,420 pounds. With their third requisition, the Russians expected so confidently to acquire another 500 pounds that papers to that effect were drafted and sent to us in Montana. If the full amount had been available, instead of 45 pounds, the aggregate would have been 1,920 pounds, or virtually one ton.

At his Paris laboratory, while chief of the Atomic Energy Commission of France, Frederic Joliot-Curie built an experimental pile to which he gave the affectionate name of "Zoe". It actually ran, though the wattage was feeble. The quantity of uranium crystals utilized, said Dr Joliot-Curie, was "something in the order of one ton".

It seems fair to take into account not merely what the Russians got, but what they tried to get. With Communist tenacity and ardent support from both White House and Lend-Lease, the Soviet Purchasing Commission strove again and again to obtain 8-1/2 tons each of uranium oxide and uranium nitrate, plus 25 pounds of uranium metal. The campaign started in February 1943, and persisted until the Russians were squelched by Secretary Stimson during April 1944.

There are memorable instances of what can be achieved with less than 17 tons of uranium powders. One was a model atomic pile which went into operation at Chicago University on December 2, 1942. "So far as we know," Dr Smyth recounts, "this was the first time that human beings ever initiated a self-maintaining nuclear chain reaction." With a power level of 200 watts, the device served as a pilot plant for the Hanford Engineer Works. The uranium supply available to them was six tons.

Even earlier, before the Manhattan Project was dreamed of, a group of scientists at Columbia University began a course of hazardous experiments under the leadership of two foreign-born savants, Leo Szilard of Hungary and Enrico Fermi of Italy. They were so ill-supported with cash that 10,000 pounds of uranium oxide had to be 'rented' at a nominal fee of 30 cents a pound from Boris Pregel, president of the Canadian Radium & Uranium Corp. of New York, who was later unjustly made a scapegoat by the press for the secret Canadian shipment.

Here was done all the preparatory work moving toward the eventual creation of the first man-made elements in history: neptunium-93 and plutonium-94. From the group's creative imagination rose in time the vast plutonium plant at Hanford, Washington, and, in a large sense, America's atom bomb itself. The materials of that triumph were not 17 but 10 tons of uranium compounds.

One of my lucky experiences was that of chancing upon the February 27, 1950 issue of the magazine, *Life*, shortly before my second appearance before the Un-American Activities Committee. I bore the copy with me to the witness chair. It contained an illustrated article on the atom bomb. I learned for the first time that a plutonium pile consists of giant blocks of graphite, surrounded by heavy walls of concrete and honey-combed with aluminum tubes. In these tubes, it was related, are inserted slugs of natural uranium, containing one per cent of U-235. The intensity of the operation was declared to be governed by means of cadmium rods.

Graphite, cadmium, aluminum tubes—where had I met these words before? In the Russian lists of Lend-Lease figures which I had added to the Jordan diary. Re-examining those pages, I discovered that during the four-year period 1942-45 we contributed to the Soviet Union 3,692 tons of natural graphite, 417 tons of cadmium metals, and tubes in an entry

designating 6,883 tons of "aluminum tubes".

The figure for cadmium was arresting in view of its extreme scarcity in this country and because of the fact that it occurs, so far as we know, sparsely if at all in the Soviet Union. Under war stimulus, American production of cadmium rose from 2,182 short tons in 1940 to 4,192 in 1945.

It was interesting to find that in 1942-45 we shipped to Russia 437 tons of cobalt—a staggering amount when collated with American production, which was nothing before the war, and increased to 382 tons in 1942 and 575 in 1945.

That cobalt is valuable in the A-bomb for retarding radioactive emanations, and could be equally so in the hydrogen bomb, has been affirmed by a chemical engineer who was consultant to one of the war agencies. "Cobalt," says he, "was one of our highest scarcity materials. If I had known that so large a proportion was going to the Russians, I should have suspected them of being at work on the bomb." Incidentally, cobalt was the first item to be restricted by President Truman in the Korean emergency.

Almost as curious was the discovery that we shipped to Russia more than 12 tons of thorium salts and compounds. Two other elements alone, besides uranium and plutonium, are fissionable. They are protoactinium and thorium. The former may be disregarded because of its rarity in nature. But thorium, which is relatively plentiful, is expected by physicists to rival uranium some day, or even supplant it, as a source of atomic energy.

Then there were cerium and strontium, of which the Soviet Purchasing Commission obtained 44 tons. Both metals, along with cadmium, thorium and cobalt, figured in Colonel Kotikov's dossier on experimental chemicals. They are useless for atomic purposes. But Russian scientists may have been working their way through the rare earths and metals on a well-founded suspicion that something momentous was afoot in that group.

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Everyone is aware, of course, that these elements have industrial or military functions unrelated to the atom bomb, but Russia had a very critical interest in procuring A-bomb components from America. Red scientists are said to have been the first in Europe to announce the theory of nuclear fission. As America discovered at a cost of billions of dollars, it is a far cry from setting down speculations on paper to putting them in practice at the dimensions imposed by modern war. Thus the Kremlin was frantically inquisitive about large-scale production techniques developed by the Manhattan Project...

One ground for minimizing my evidence is a claim that Russia had abundant uranium of its own, in connection with massive radium deposits in the former area of Turkestan, the Kazakh Republic and the state of Tannu-Tuva, north of Mongolia. More than 30 years ago, it is said, Soviet physicists worked out the correct formula for separating uranium from radium. On the other hand, as atomic experts are fond of pointing out, "You can never have too much uranium."

If a blunder occurred, such objections proceed, it was not the shipment of minor quantities of uranium compounds to the Soviet Union, but the publication of Dr Smyth's book, which told not only how to make a nuclear bomb but how not to make one. The chief atomic authority of Norway, Gunnar Randers, is cited as having pronounced that the indiscretion of this publication saved Russia and every other country two years of research. According to Professor Szilard, "one half of the atomic bomb secret was given away when we used the bomb, and the other half when we published the Smyth report." After the espionage trials, however, one may ask whether the Smyth revelations were not more informative to the American public than to the Politburo...

In any event, it is heartening to know that, on the whole, our uranium embargo stood firm. Moscow was prevented from winning its grand objective of 17 tons, in contrast to the delivery of 15 tons of uranium chemicals to Great Britain which the Manhattan Project authorized. The steadfastness of the General Groves organization against Russia was the more admirable in that it was challenged by Mr Hopkins, with

the power of the White House behind him. After the Un-American Activities Committee closed its hearing on March 7, 1950, I was examined searchingly by Government investigators. They tried to lure me into admitting a possibility, however faint, that the person to whom I spoke might have been Edward R. Stettinius, Jr, who had died five months earlier on October 11, 1949.

My answer was that never once, during my two years at Newark and Great Falls, did I hear so much as a mention of Stettinius, though reference to Hopkins was daily on the lips of the Russians.

It is common knowledge that on August 28, 1941, Stettinius succeeded Hopkins as titular chief of Lend-Lease, and held the post until September 25, 1943, when the agency was merged with kindred bodies into the Foreign Economic Administration, with Leo A. Crowley as Administrator.

But even the official biographer of Mr Hopkins does not hesitate to write:

"Hopkins knew that policy governing Lend-Lease would still be made in the White House and that the President would continue to delegate most of the responsibility to him. Stettinius was his friend and

they could work together—and that was that."⁹

Another effort to clear Hopkins was based on the supposition that he acted in ignorance of what it was all about. Even if he helped the Russians to get A-bomb materials, the implication ran, it was the unsuspecting tool of Soviet cunning.

The Hopkins papers for Mr Sherwood's book were organized by Hopkins' longtime friend, Sidney Hyman. A fortnight after my first broadcast he was quoted as affirming that, until Hiroshima, Harry Hopkins had not "the faintest understanding of the Manhattan Project" and "didn't know the difference between uranium and geranium".

On the contrary, Harry Hopkins was one of the first men anywhere to know about the atom bomb. Dr Vannevar Bush chose Hopkins as his intermediary for presenting to Mr Roosevelt *the idea of the atom bomb*. It was in consultation with Hopkins that Dr Bush drafted the letter, for Mr Roosevelt's signature, which launched the A-bomb operation on June 14, 1941! Where do we learn this? In the official biography by Mr Sherwood, on pages 154 and 155. Finally, on page 704 we are told that the head of a

state, Winston Churchill, "was conducting this correspondence on the atomic project with Hopkins rather than with the President, and that he continued to do so for many months thereafter".

A witness on the topic, General Groves testified that to the best of his recollection and belief he never met Harry Hopkins, talked with him on the telephone, or exchanged letters or dealt with anyone claiming to represent him. But the General thought it incumbent to remark, "I do know, of course, that Mr Hopkins knew about this project. I know that."¹⁰

An early symptom of White House obsession for 'reassuring Stalin' has been described by General Deane. In letters to American war agencies, dated March 7, 1942, Mr Roosevelt ordered that preferential position, in the matter of munitions, should be given to the Soviet Union over all other Allies and even the armed forces of the United States. Then and there, decided the former chief of the US Military Mission to Moscow, was "the beginning of a policy of appeasement of Russia from which we have never recovered and from which we are still suffering"¹¹...

Endnotes

¹ Stimson, Henry L. and Bundy, McGeorge. *On Active Service in Peace and War*, Harper, 1947.

² "Hearings Regarding Shipments of Atomic Materials to the Soviet Union during World War II", Testimony of General Groves, December 7, 1949, House of Representatives Committee on Un-American Activities, US Government Printing Office, USA, p. 941.

³ *ibid.*, p. 945.

⁴ *ibid.*, p. 900.

⁵ *ibid.*, p. 948.

⁶ *ibid.*, p. 947.

⁷ "Hearings...", Testimony of Hermann H. Rosenberg, January 24, 1950, p. 1035.

⁸ "Hearings...", General Groves, p. 954.

⁹ Sherwood, Robert E., *Roosevelt and Hopkins: An Intimate History*, Harper, 1948, p. 560.

¹⁰ "Hearings...", General Groves, p. 947.

¹¹ Deane, John R., *The Strange Alliance*, Viking, 1947, p. 89.

Copies of the book, *From Major Jordan's Diaries*, are available from NEXUS Magazine.

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PO Box 30, Mapleton Qld 4560

Tel: (07) 5442 9280 (4 lines)

Fax: (07) 5442 9381

email: nexus@peg.apc.org

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